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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/708,486	03/06/2004	Jonathan D. Chapple-Sokol	BU920040018US1	2485
30449	7590	03/22/2006	EXAMINER	
SCHMEISER, OLSEN + WATTS			KEBEDE, BROOK	
3 LEAR JET LANE			ART UNIT	
SUITE 201			PAPER NUMBER	
LATHAM, NY 12110			2823	

DATE MAILED: 03/22/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

*A*

<b>Office Action Summary</b>	<b>Application No.</b> 10/708,486	<b>Applicant(s)</b> CHAPPLE-SOKOL ET AL.	
	<b>Examiner</b> Brook Kebede	<b>Art Unit</b> 2823	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 24 February 2006.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-35 is/are pending in the application.  
     4a) Of the above claim(s) 7,9 and 11-35 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-6,8 and 10 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
     Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
     a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>3/6/04</u> . | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Election/Restrictions*

1. Applicants' election with traverse of the Group I invention, claim(s) 1-10 and 21-25 and further election with traverse of Species I, claims 1-6, 8 and 10 in the response filed on February 24, 2006 is acknowledged. The traversal is on the ground(s) that "the subject matter of all claims 1-35 is sufficiently related a throughout search the subject matter of any one group of claims would compasses a search for the subject matter the remaining claims..." This is not found persuasive.

A restriction requirement between one set of product claims and a set of process claims was issued in the Office action that mailed on January 24, 2006. "Section 121 [of Title 35 USC] permits a restriction for 'independent and distinct inventions,' which the PTO construes to mean that the sets of claims must be drawn to separately patentable inventions." See *Applied Materials Inc. v. Advanced Semiconductor Materials* 40 USPQ2d 1481, 1492 (Fed. Cir 1996)(Archer, C.J., concurring in-part and dissenting in-part). A product and the process of making the product are "two independent, albeit related inventions." See *In re Taylor*, 149 USPQ 615, 617 (CCPA 1966). "When two sets of claims filed in the same application are patentably distinct or represent independent inventions, the examiner is to issue a restriction requirement." See *In re Berg*, 46 USPQ2d 1226, 1233 n.10 (Fed. Cir. 1998).

The examiner, in issuing a restriction requirement, must demonstrate "one way distinctiveness." *Applied Materials Inc.* at 1492. As stated within the restriction requirement, "inventions are distinct if either or both of the following can be shown: (1) that the process as claimed can be used to make other and materially different product or (2) that the product as

Art Unit: 2823

claimed can be made by another and materially different process (MPEP § 806.05(f)).” In this application, the examiner restricted the product claims from the process claims on the grounds that “the product as claimed can be made by another and materially different process such as a process, wherein the device of Group I can be manufactured by selectively depositing an in situ doped semiconductor material in a predetermined first region of a semiconductor substrate without a photo-blocking layer that used to cover top of a first semiconductor region,” and that, as a result, a restriction was necessary.

In addition to one way distinctiveness, the examiner must show “why it would be a burden to examine both sets of claims.” *Applied Materials Inc.* at 1492. “A serious burden on the examiner may be *prima facie* shown if the examiner shows by appropriate explanation either separate classification, separate status in the art, or a different field of search.” MPEP 803. An explanation was provided in the restriction requirement. Specifically, in addition to being distinct, the examiner indicated that restriction is proper because the product claims and the process claims “have acquired a separate status in the art.”

Furthermore with respect to species restriction, Section 121 [of Title 35 USC] permits a restriction for “independent and distinct inventions.” Although 37 CFR §1.141 provides that a reasonable number of species may still claimed in one application, it is still proper to restrict claims of different species as long as the Examiner shows *prima facie* case of a serious burden and appropriate explanation of separate classification, or separate status in the art, or a different field of search. For instance, the search for Species I not necessary requires search for Species II through Species V, because the process and device structure do not possess similar features due to different configuration of diffusion regions as well as metal wirings. Such distinct process and

Art Unit: 2823

device structure require an independent search from one another which causes a great burden to the Examiner and it acquired different field of search and that, as a result, a restriction was necessary. An explanation was provided in the restriction requirement. Specifically, in addition to being burdensome, the examiner indicated that restriction is proper because different species in the claims are required "different field of search."

The criteria of distinctness and burdensomeness have been met, as demonstrated hereinabove. Accordingly, the restriction requirement in this application is still deemed proper and is therefore **made FINAL**.

2. Claims 11-20 and 26-35 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention, the requirement having been traversed in the response filed on February 24, 2006. And further Claims 7, 9 and 21-25 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected species, the requirement having been traversed in the response filed on February 24, 2006.

***Claim Rejections - 35 USC § 112***

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 1-6, 8 and 10 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1 recites the limitation "wherein without the second semiconductor region, in response to the first semiconductor region being excited and the electrically conducting wire being directly exposed to an ionic solution, a first current flows between the ionic solution and

Art Unit: 2823

the first semiconductor region through the electrically conducting wire, and wherein with the presence of the second semiconductor region, in response to the first semiconductor region being excited and the electrically conducting wire being directly exposed to the ionic solution, a second current flows between the first semiconductor region and the second semiconductor region so as to reduce the magnitude of the first current” in lines 8-20.

However, the recited limitation lacks clarity in its meaning and scope for the following reasons:

The instant application, in particularly described in pages 1-3 of the specification, is designed to prevent art recognized problem of LMP which can cause short-circuit as result of the electrolyte (ionic solution) during the CMP process of the copper or other metallic wire. But the aforementioned limitation it is not clear because it is not clear to one of ordinary skill in the art what the claim entail. Is that a functional limitation of the device? Is that the structural limitation of the device? What does it mean by without the second semiconductor region? The second semiconductor region already claimed how one can eliminate that region? And etc.

Therefore, the claim is indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 2-6, 8 and 10 are rejected as being directly or indirectly dependent of the rejected independent base claim.

Applicants' cooperation is requested in reviewing the claims structure to ensure proper claim construction and to correct any subsequently discovered instances of claim language noncompliance. See *Morton International Inc.*, 28USPQ2d 1190, 1195 (CAFC, 1993).

Art Unit: 2823

**In light of the rejection 35 U.S.C. § 112 second Paragraph that set forth herein above, the following 35 U.S.C. 102 rejection is based on prior art which reads on the interpretation the claim language of the instant application as best as understood by the Examiner. See *Ex parte Ionescu*, 222 USPQ 537 (Bd. Pat. App. & Inter. 1984) (Claims on appeal were rejected on indefiniteness grounds only; the rejection was reversed and the case remanded to the examiner for consideration of pertinent prior art.).**

***Claim Rejections - 35 USC § 102***

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

6. Claims 1-6, 8 and 10 are rejected under 35 U.S.C. 102(e) as being anticipated by Kim et al. (US/6,717,209).

Re claim 1, Kim et al. disclose a semiconductor structure, that enable to prevent accumulation of the ion (plasma) charge into the semiconductor substrate (i.e., the device that can avoid short-circuiting) the structure comprising: an electrically conducting wire (220); and first and second semiconductor regions (214 216) being electrically coupled to the electrically conducting wire (220) and being doped with first and second doping types (i.e., p-type and n-type dopant), respectively (see Figs. 8 and 12), wherein the first and second doping types are of

Art Unit: 2823

opposite doping types (i.e., p-type is opposite of n-type and vice versa) (see Fig. 8; also see Abstract and relevant text in Col. 2, line 25 – Col. 4, line 34 and C7, line 45 – Col. 9, line 67).

Re claim 2, as applied to claim 1 above, Kim et al. disclose all the claimed limitations including the limitation wherein the second semiconductor region is electrically coupled to the electrical conducting wire via the first semiconductor region (see Fig. 8; also see Abstract and relevant text in Col. 2, line 25 – Col. 4, line 34 and C7, line 45 – Col. 9, line 67).

Re claim 3, as applied to claim 1 above, Kim et al. disclose all the claimed limitations including the limitation wherein the first and second semiconductor regions are electrically coupled to each other via the electrically conducting wire (see Fig. 8; also see Abstract and relevant text in Col. 2, line 25 – Col. 4, line 34 and C7, line 45 – Col. 9, line 67).

Re claim 4, as applied to claim 1 above, Kim et al. disclose all the claimed limitations including the limitation wherein the first and second doping types are N and P types, respectively (see Fig. 8; also see Abstract and relevant text in Col. 2, line 25 – Col. 4, line 34 and C7, line 45 – Col. 9, line 67).

Re claim 5, as applied to claim 1 above, Kim et al. disclose all the claimed limitations including the limitation wherein the first and second doping types are P and N types, respectively (see Fig. 8; also see Abstract and relevant text in Col. 2, line 25 – Col. 4, line 34 and C7, line 45 – Col. 9, line 67).

Re claim 6, as applied to claim 1 above, Kim et al. disclose all the claimed limitations including the limitation wherein the second semiconductor region is inside the first semiconductor region (see Fig. 8; also see Abstract and relevant text in Col. 2, line 25 – Col. 4, line 34 and C7, line 45 – Col. 9, line 67).



Art Unit: 2823

Re claim 8, as applied to claim 1 above, Kim et al. disclose all the claimed limitations including the limitation wherein the first semiconductor region comprises a third semiconductor region being heavily doped with the first doping type, and wherein the first semiconductor region is electrically coupled to the electrically conducting wire via the third electrically conducting wire (see Fig. 8; also see Abstract and relevant text in Col. 2, line 25 – Col. 4, line 34 and C7, line 45 – Col. 9, line 67).

Re claim 10, as applied to claim 8 above, Kim et al. disclose all the claimed limitations including the limitation wherein the second semiconductor region is inside the first semiconductor region and is electrically coupled to the third semiconductor region via a conducting strap (see Fig. 8; also see Abstract and relevant text in Col. 2, line 25 – Col. 4, line 34 and C7, line 45 – Col. 9, line 67).

### ***Conclusion***

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure Noguchi (US/6,365,939) also disclose similar inventive subject matter.

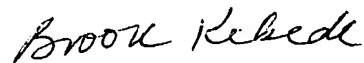
### ***Correspondence***

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Brook Kebede whose telephone number is (571) 272-1862. The examiner can normally be reached on 8-5 Monday to Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew S. Smith can be reached on (571) 272-1907. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 2823

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Brook Kebede  
Primary Examiner  
Art Unit 2823

BK  
March 17, 2006